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EXAMINER	
TRUJILLO, JAMES K	

ART UNIT	PAPER NUMBER
2116	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/863,177	LEE, HOWARD HONG-DOUGH	
	Examiner	Art Unit	
	James K. Trujillo	2116	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 May 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-54* is/are pending in the application.

4a) Of the above claim(s) *1-10 and 42-54* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *11-41* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☒ Interview Summary (PTO-413) Paper No(s)/Mail Date. *07292004* .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. The office acknowledges the receipt of the following and placed of record in the file: Filing of Application dated 5/23/01.

Election/Restrictions

2. Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 1-10, drawn to a computer power supply system with multiple power supplies, classified in class 713, subclass 300.

II. Claims 11-41, drawn to an energy conserving apparatus operating without a main processor being active, classified in class 713, subclass 323.

III. Claims 42-54, drawn to an operating system for controlling main microprocessor and auxiliary processor activity, classified in class 713, subclass 300.

3. The inventions are distinct, each from the other because of the following reasons:

a. Inventions I and II are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable. In the instant case, invention I has separate utility such as in a computer system with multiple power supplies that do not operate with a microprocessor being inactive. See MPEP § 806.05(d).

b. Inventions I and II are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable. In the instant case, invention I has separate utility such as in a

computer system having an operating system that controls only a single processor. See MPEP § 806.05(d).

c. Inventions II and III are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable. In the instant case, invention I has separate utility such as working in a computer system that has two microprocessors each with a separate operating system. See MPEP § 806.05(d).

4. Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Groups II and III, the search required for Group II is not required for Groups I and III, and the search required for Group III is not required for Groups I and II restriction for examination purposes as indicated is proper.

5. During a telephone conversation with Howard Hong-Dough Lee on 20 July 2004 a provisional election was made without traverse to prosecute the invention of II, claims 11-41. Affirmation of this election must be made by applicant in replying to this Office action. Claims 1-10 and 42-54 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

6. Claims 11-41 are presented for examination.

Specification

7. The abstract of the disclosure is objected to because it is more than 150 words in length. Correction is required. See MPEP § 608.01(b).

Claim Objections

8. Claims 11, 15-16 and 23 are objected to because of the following informalities:

a. As to claim 11, on line 6 of the claim "does not require" should be changed to "is not required" for purposes of clarity.

b. As to claim 15, on line 3 of the claim "microprocessor" should be preceded by "main" to avoid improper antecedent basis.

c. As to claim 16, on line 2 of the claim "providing s standby" should be changed to "providing a standby" to correct a typographical error.

d. As to claim 23, on lines 4-5 of the claim "does not require" should be changed to "is not required" for purposes of clarity.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

10. Claims 11, 13-14, 17-19, 21-23, 26-28, 33, 35, 37, 38 are rejected 35 U.S.C. 102(e) as being anticipated by Cai, U.S. Patent 6,501,999.

11. As to claim 11, Cai teaches an energy-conserving motherboard having multiple operating functions, comprising:

a. first power-distributing circuitry actuatable for providing a first operating function, wherein said first power-distributing circuitry (power to the high-performance processor is switched on or off) is arranged for establishing power connection with main processor circuitry (high-performance processor) [col. 3 lines 1-16, col. 3 line 64 through col. 4 line 2, col. 4 lines 19-46, figures 1 and 2];

b. a second power-distributing circuitry actuatable for providing a second operating function (supplying power to a power-efficient processor while removing power to the high-performance processor) that is not require to activate said main microprocessor [col. 3 lines 1-16 and col. 3 lines 55-57]; and

c. control means for selective activating (processor arbitration mechanism) said first power-distributing circuitry (high-performance processor) and said second power-distributing circuitry (power-efficient processor), so as to respectively provide said first operating function and said second operating function (either of the processors may be used or in another configuration both may be used at the same time) [col. 3 lines 25-49, col. 6 lines 15-34, and figure 3].

12. As to claim 13, Cai taught the energy-conserving motherboard according to claim 11 as described above. Cai further teaches wherein said second power-distributing circuitry is arranged for establishing power connection with auxiliary microprocessor circuitry (power

efficient microprocessor 120) [col. 3 lines 3-16], random access memory circuitry (system memory 140) [col. 4 lines 19-26], nonvolatile memory storage (hard drive or optical disk) [col. 1 lines 22-37], and auxiliary video circuitry (graphics controller 130) [col. 4 lines 19-26], so as to provide said second operating function for performing information processing without activating said first power distributing circuitry (the power-efficient microprocessor may operated alternatively with the high-performance processor).

13. As to claim 14, Cai taught the energy-conserving motherboard according to claim 13 as described above. Cai further teaches wherein said control means is adapted in a manner for activating said first power-distributing circuitry when detecting an activity of said auxiliary microprocessor circuitry is above a preset value (predetermined criteria based on processing needs and power consumption requirements) [col. 3 lines 36-49]. This suggests to one of ordinary skill in the art that if the activity of the auxiliary microprocessor circuitry is too high the main processor with the first power-distributing circuitry should be activated.

14. As to claim 17, Cai taught the energy-conserving motherboard according to claim 13 as described above. Cai further teaches third power-distributing circuitry for providing a standby function to allow at least said first power-distributing circuitry when deactivated to be reactuatable for re-providing at least said first operating function, wherein said third power-distributing circuitry is arranged for establishing power connection with standby circuitry for detecting a reactivating signal [col. 3 lines 25-49]. Specifically, Cai teaches that the first power-distributing circuitry may reactuated to re-provide main processor functions if required.

15. As to claim 18, Cai taught the energy-conserving motherboard according to claim 17 as described above. Cai teaches wherein said third power-distributing circuitry is arranged for

establishing power connection further with keep-alive memory circuitry for storing information needed for resuming activities with said first operating function [col. 4 line 61 through col. 5 line 10]. Specifically, Cai teaches that when the operating functions are switched from first operating function to the second operating function the states of the CPUs are kept by send the first operating function state to chip 124. When the first operating function is resumed the process is reversed.

16. As to claim 19, Cai taught the energy-conserving motherboard according to claim 17 as described above. Cai further taught wherein said control means is adapted in a manner for activating said second power-distributing circuitry (high-efficiency processor is powered) at a condition selected from the group consisting of when said first power-distributing circuitry (high-performance processor is powered) is activated or deactivated, when said third power-distributing circuitry is activated or deactivated (powered only when switching to high-performance processor between standby and awake modes) and their combinations [col. 3 lines 3-16].

17. As to claims 21 and 22, Cai taught the energy-conserving motherboard according to claim 11 as described above. Cai further taught a control means for deactivating said first power-distributing circuitry when detecting an activity of said main microprocessor circuitry is below a preset value [col. 3 lines 25-49]. Specifically, Cai teaches that if operations are less computationally intensive (activity is below a certain value) the main processor may be deactivated (deactivating first power-distributing circuitry) allowing only the high-efficient processor to process operations. Cai teaches that control means may be manually operated or software operated.

18. As to claim 23, Cai teaches an information-processing apparatus having multiple operating functions, comprising:

a. a first group of circuitry actuatable for providing a first operating function (associated with high-performance processor), wherein said first group of circuitry comprises main microprocessor circuitry (high-performance processor) [col. 3 lines 1-16, col. 3 line 64 through col. 4 line 2, col. 4 lines 19-46, figures 1 and 2];

b. a second group of circuitry actuatable for providing a second operating function that is not required to activate said main microprocessor circuitry (power efficient processor operates while high-performance processor is powered down) [col. 3 lines 1-16 and col. 3 lines 55-57];

c. a third group of circuitry actuatable for providing a standby function to allow at least said first group of circuitry when deactivated to be reactuatable for providing said first operating function (the arbitration mechanism may determine that the high-performance circuitry may be reactuated to perform a high-performance operation) [col. 3 lines 25-49];

d. power providing means for providing power at least to said first group of circuitry, said second group of circuitry, and said third group of circuity (Cai, as set forth above, provides power to the high-performance processor and power-efficient processor. Cai must also have power provide to the arbitration mechanism so as to perform the switching between the processor) [col. 3 lines 25-49];

e. control means (arbitration means such as software) for controlling said power providing means to selectively activate said first group of circuitry, said second group of

circuitry, and said third group of circuitry, so as to respectively provide said first operating function, said second operation function, and said stand by function [col. 3 lines 37-41].

19. As to claims 26, 27 and 38, Cai taught the claimed information processing apparatus according to claim 23 as described above. Cai further teaches wherein said second power-distributing circuitry is arranged for establishing power connection with auxiliary microprocessor circuitry (power efficient microprocessor 120) [col. 3 lines 3-16], random access memory circuitry (system memory 140) [col. 4 lines 19-26], nonvolatile memory storage (hard drive or optical disk) [col. 1 lines 22-37], and auxiliary video circuitry (graphics controller 130) [col. 4 lines 19-26], so as to provide said second operating function for performing information processing without activating said first power distributing circuitry (the power-efficient microprocessor may operated alternatively with the high-performance processor).

20. As to claim 28, Cai taught the information-processing apparatus according to claim 26 as described above. Cai further teaches wherein said control means is adapted for controlling said power providing means to activate said first group of circuitry when detecting activity of said auxiliary microprocessor is above a preset value [col. 3 lines25-49]. Cai teaches that if the computational intensity of the main processor is not required it will be deactivated and the auxiliary processor will be activated. It would also follow that the opposite of Cai is intended. That is, that if processing intensity of the auxiliary processor becomes too great the main processor would be activated because it is designed for such an operation.

21. As to claim 33, Cai taught the information processing apparatus according to claim 23 as described above. Cai teaches wherein said power providing means comprises rechargeable

battery and said control means adapted for controlling said rechargeable battery not to energize said first group of circuitry when detecting said activity of said main processor circuitry is below a preset value, so as to conserver the power of said rechargeable battery [col. 1 lines 10-21 and col. 3 lines 25-49]. Specifically, Cai teaches the that the main processor will be deenergized when processing is below a particular level (less computationally comprehensive) and the main processor is not required.

22. As to claim 35, Cai taught the information processing apparatus according to claim 23 as described above. Cai further taught a control means for controlling said power providing means to deactivate said firs group of circuitry when detecting and an activity of said main microprocessor circuitry is below a preset value [col. 3 lines 25-49]. Specifically, Cai teaches that if operations are less computationally intensive (activity is below a certain value) the main processor may be deactivated (deactivating first power-distributing circuitry) allowing only the high-efficient processor to process operations.

23. As to claim 37, Cai taught the information processing apparatus according to claim 23 as described above. Cai further taught a first means actuatable in response to a signal for controlling said power providing means to selectively activate or deactivate said first group of circuitry, and a second means manually-operable for controlling said power providing means to selectively activate or deactivate said second group of circuitry [col. 3 lines 25-49]. Specifically, the means to activate or deactivate groups of circuitry may be by manual intervention by a user through and interface or by software using control signals.

Claim Rejections - 35 USC § 103

24. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

25. Claims 12 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cai, U.S. Patent 6,501,999 in view of Thomas et al., U.S. Patent 5,974,557.

26. As to claims 12, Cai taught the claimed energy-conserving motherboard. Cai does not expressly disclose first power-distributing circuitry is arranged for establishing power connection further with means for cooling said main processor.

Thomas teaches first power-distributing circuitry arranged for establishing power connection with means for cooling (cooling fan) a main processor (microprocessor 2) [col. 7 lines 53-61 and col. 8 lines 11-15]. Thomas teaches a computer system having main processor and a fan controller. The fan controller cools the microprocessor according to activity of the processor. Therefore the power distributing circuitry of cooling means is arranged with the power-distributing circuitry of the main processor. Thomas does this to insure that the fan would only be used when necessary thereby saving battery energy to the extent possible [col. 8 lines 18-21].

It would have been obvious to one of ordinary skill in the art, having the teachings of Cai and Thomas before him at the time the invention was made, to modify power-distributing circuitry of Cai to include establishing a power connection with a cooling means for said main processor as taught by Thomas to obtain cooling for the main processor. One of ordinary skill in

the art would be motivated to make this combination in order to save battery energy to the extent possible in view of the teaching of Thomas.

27. As to claim 24, Cai taught the information-processing apparatus according to claim 23. Cai does not expressly disclose first group of circuitry comprises a means for cooling said main processor.

Thomas teaches first group of circuitry with means for cooling (cooling fan) a main processor (microprocessor 2) [col. 7 lines 53-61 and col. 8 lines 11-15]. Thomas teaches a computer system having main processor and a fan controller. The fan controller cools the microprocessor according to activity of the processor. Therefore, the circuitry of the cooling means is arranged with a first group of circuitry of the main processor. Thomas does this to insure that the fan would only be used when necessary thereby saving battery energy to the extent possible [col. 8 lines 18-21].

It would have been obvious to one of ordinary skill in the art, having the teachings of Cai and Thomas before him at the time the invention was made, to modify first group of circuitry of Cai to include a cooling means for said main processor as taught by Thomas to obtain cooling for the main processor. One of ordinary skill in the art would be motivated to make this combination in order to save battery energy to the extent possible in view of the teaching of Thomas.

28. Claims 15, 25, 39 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cai, U.S. Patent 6,501,999 in view of Atkinson, U.S. Patent 6,088,809.

29. As to claim 15, Cai taught the energy-conserving motherboard according to claim 11, as described above. Cai does not expressly disclose wherein said second power-distributing circuitry is arranged for establishing power connection with audio circuitry so as to provide said second operating function for producing audio information without activating said microprocessor. Cai as set forth above teaches second power-distributing circuitry that provides a second operation that does not require activation of the main microprocessor circuitry.

Atkinson teaches power distributing circuitry arranged for establishing power connection with audio circuitry so as to provide an operating function for producing audio information with the activation of said main microprocessor [col. 2 lines 40-43]. Specifically, Atkinson teaches audio information (section) and CD-ROM are left active while remaining system is placed into a low power mode (main microprocessor inactive). Atkinson teaches a computer system similar to that of Cai. The system of Atkinson allows audio information to be played from a system while conserving power [col. 2 lines 28-35].

It would have been obvious to one of ordinary skill in the art, having the teachings of Cai and Atkinson before them at the time the invention was made, to modify Cai by arranging said second power-distributing circuitry to include establishing power connection with audio circuitry for the production of audio information without activating said main microprocessor as taught by Atkinson.

One of ordinary skill would have made the modification because it would allow a user to play audio information to be played from the system while still conserving power.

30. As to claims 25, 39 and 41, Cai taught the information-processing apparatus according to claim 23 as described above. Claims 25, 39 and 41 are rejected for the same reasoning as in the rejection of claim 15.

31. Claims 16, 20, 29, 30, 34, 36 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cai, U.S. Patent 6,501,999 in view of Crump, U.S. Patent 5,689,715.

32. As to claim 16, Cai taught the energy-conserving motherboard according to claim 11 as described above. Cai teaches third power distributing circuitry for providing a standby function to allow first power-distributing circuitry to be deactivated [col. 3 lines 3-6]. Cai does not expressly disclose further comprising a third power-distributing circuitry for providing a standby function to allow *both said first power-distributing circuitry* ***and*** *said second power-distributing circuitry to be deactivated*, wherein said control means is adapted in a manner for firstly reactivating said second power-distributing circuitry to provide said second operating function when detecting a reactivating signal [emphasis added].

Crump teaches providing a standby function to allow power-distributing circuitry to be deactivated and to provide an operating function when detecting a reactivating signal [figure 4]. Specifically, Crump shows a processor transitioning from a normal operating state 150 to a standby state 152 or a suspend state 154 if inactivity standby or inactivity suspend timeouts are reached. Crump teaches that the stand and suspend states have the advantage using very little electrical power while maintaining the state of the system [col. 9 line 63 through col. 10 line 8 and col. 10 line 49-65]. Crump would suggest to those of skill in the art that any processor

would benefit by applying these states. Crump teaches that certain activities would cause the processor to be reactivated.

It would have been obvious to one of ordinary skill in the art, having the teachings of Cai and Crump before them at the time the invention was made, to modify Cai by including within his third power distributing a standby function to allow both first power-distributing circuitry and second power-distributing circuitry to be deactivated and reactivated as taught by Crump.

One of ordinary skill in the art would have made the modification in order to further reduce power consumption when no activity is taking place with second operating function in view of the teaching of Crump. Specifically, Cai only discusses the interaction for processing a function using high-performance and high-efficiency processors. Cai does not address how to save power when no activity is taking place. Crump addresses how to save power when no activity is taking place.

33. As to claim 20, Cai taught the energy-conserving motherboard according to claim 17 as described above. Cai further teaches (i) activating first power-distributing circuitry and said second power distributing circuitry at the same time to provide a full operating function (both high-performance and high-efficiency processors may be powered at the same time), (ii) activating said second power-distributing circuitry and third power-distributing circuitry without activating first power-distributing circuitry to provide an energy-conserving operating function (powering high-efficiency processor while providing transitioning to power high-performance processor), (iii) activating only said second power-distributing circuitry to provide and independent energy-conserving operation function (when one processor is operating and the other is powered off) [col. 3 lines 3-16 and col. 4 line 61 through col. 5 line 10]. Cai does not

expressly disclose activating only said third power-distributing circuitry to provide only said standby function.

Crump teaches providing a standby function to allow power-distributing circuitry to be deactivated and to provide an operating function when detecting a reactivating signal [figure 4]. Specifically, Crump shows a processor transitioning from a normal operating state 150 to a standby state 152 or a suspend state 154 if inactivity standby or inactivity suspend timeouts are reached. Crump teaches that the stand and suspend states have the advantage using very little electrical power while maintaining the state of the system [col. 9 line 63 through col. 10 line 8 and col. 10 line 49-65]. Crump would suggest to those of skill in the art that any processor would benefit by applying these states. Crump teaches that certain activities would cause the processor to be reactivated.

It would have been obvious to one of ordinary skill in the art, having the teachings of Cai and Crump before them at the time the invention was made, to modify Cai by including within his third power distributing a standby function to allow both first power-distributing circuitry and second power-distributing circuitry to be deactivated and reactivated as taught by Crump.

One of ordinary skill in the art would have made the modification in order to further reduce power consumption when no activity is taking place with second operating function in view of the teaching of Crump. Specifically, Cai only discusses the interaction for processing a function using high-performance and high-efficiency processors. Cai does not address how to save power when no activity is taking place. Crump addresses how to save power when no activity is taking place.

34. As to claims 29, 30, 34 and 36, Cai together with Crump taught the claimed energy-conserving motherboard therefore together they also taught the claimed information-processing apparatus.

35. As to claim 40, Cai together with Crump taught the information processing apparatus according to claim 23 as described above. Crump teaches a fourth group of circuitry arranged to provide a read and write function therebetween at a condition when said first group of circuitry, said second group of circuitry are all deactivated [col. 10 lines 57-60]. Specifically, Crump uses a different group of circuitry to read and write the state of the computer to a disk when deactivating first and second groups of circuitry. Cai suggests that an optical disk may be used within in is his system for storage [col. 1 lines 26-31].

Cai and Crump do not expressly disclose wherein two optical disks (Cai mentions using only one) may be used. However, one of ordinary skill in the art will recognize that adding an additional optical disk may desirably increase the storage capabilities of a system. It would have been obvious to one or ordinary skill in the art at the time of invention to modify Cai together with Crump by adding an optical disk to the system. One of ordinary skill in the art would have made the modification to increase the storage capabilities of the system.

36. Claims 31 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cai, U.S. Patent 6,501,999 in view of Nicol et al., U.S. Patent 6,141,762 and Suzuki et al., U.S. Patent 6,278,598.

37. As to claims 31 and 32, Cai taught the information processing apparatus according to claim 23, as described above. Cai teaches wherein said power providing means comprises at

least one power provider selected from the group consisting of non-rechargeable battery, rechargeable battery (battery with AC power), power circuitry for generating DC from AC and their combinations [col. 1 lines 10-37 and col. 3 lines 40-49].

Cai does not expressly disclose for providing a first DC power supply, a second DC power supply, a third DC power supply and their power combinations respectively to said first group of circuitry, said second group of circuitry, said third group of circuitry, and their combinations. Specifically, Cai is silent with respect to the types of power supplies used for the groups of circuitry.

Nicol teaches a computer system wherein the power providing means comprises circuitry for converting AC power selectively to a first DC power supply, a second DC power supply and their power combinations to said first group of circuitry (processing element (PE)), said second group of circuitry (another PE) [figure and col. 5 line 66 through col. 6 line 6]. The system of Nicol is similar to that of Cai in that both systems use multiple processors. Nicol uses power supplies for each processor to optimally supply different voltage and frequency [col. 5 line 53 through col. 6 line 2].

Suzuki teaches a computer system wherein the power providing means comprises circuitry for convert AC power to a third DC power supply (305 DC/DC converter) [figure 5]. The third DC power supply of Suzuki is used to supply power to a different load. The system of Suzuki is similar to that of Cai in that both are directed toward portable computers. It appears that the feature of having a third DC power supply in Suzuki provides the advantage of being able to reliably supply different voltages to different loads.

It would have been obvious to one of ordinary skill in the art, having the teaching of Cai, Nicol and Suzuki before them, to modify the Cai by implementing the power supplies as taught by Nicol and Suzuki. One of ordinary skill in the art would have made the modification to supply each processor of Cai with optimal voltages and frequencies and reliably supply third group of circuitry.

Conclusion

38. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

> U.S. Pat. No. 6,240,521 to Barber et al. This patent teaches a computer system that uses a high-speed processor and a low power processor to reduce power consumption.
>
> U.S. Pat. No. 6,035,408 to Huang. This patent teaches a computer system that uses a high-speed processor and a low power processor to reduce power consumption.
>
> U.S. Pat. No. 5,834,856 to Tavallaei et al. This patent teaches a multiprocessor computer system wherein each processor has its own regulator.
>
> U.S. Pat. No. 5,036,455 to Atwood. This patent teaches a multiprocessor computer system wherein each processor has its own regulator.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James K. Trujillo whose telephone number is (703) 308-6291. The examiner can normally be reached on M-F (7:30 am - 5:00 pm) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynne Browne can be reached on (703)308-1159. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

James Trujillo
August 8, 2004

A. ELAMIN
PRIMARY EXAMINER